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EXAMINER

NGUYEN, DUNG T

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

DETAILED ACTION

Applicants' amendment dated 01/06/2009 has been received and entered. By the amendment, claims 11-18 and 22 are pending in the application.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 11-18 stand under 35 U.S.C. 103(a) as being unpatentable over United States Patent No. 6,122,024 (to Molsen et al.) in view of United States Patent No. 6,222,603 B1 (to Sakai et al.) and United States Patent No. 6,429,914 (to Kubota et al.), as stated in the previous office action.

As to claim 11, Molsen teaches and discloses switchable liquid crystal devices. Molsen shows in Figure 1, a first substrate (transparent substrate 1), a second substrate (transparent substrate 4) opposing the first substrate (transparent substrate 1), a liquid crystal layer (nematic liquid crystals 8) between the first (1) and second (4) substrates, the liquid crystal having photopolymerisable material with one or more reactive groups mixed in with a non-chiral nematic liquid crystal and whereby ultraviolet radiation forms a helical polymer network (See Column 4, Lines 32-67)(Applicant's liquid crystal layer between the first and second substrates, the liquid crystal layer having a photo-reactant material and a liquid crystal, wherein

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the photo-reactant material and the liquid crystal form a polymer network.") and the liquid crystal material (8) is aligned in a direction different from the photo-reactant (9)(see figure 2)in which some of the photo-reactant material (9) aligned towards the first substrate (1) and some of the liquid crystal material (molecules 8) aligned toward the second substrate (4).

Molsen neither discloses a sealant along a periphery of one of the first and second substrates nor the first substrate including two electrodes. Sakai et al. disclose a first sealant (6) and a second sealant (11) along a periphery of a pair of substrates (2). Therefore, it would have been obvious to one of ordinary skill in the art of liquid crystal displays at the time the invention was made to modify Molsen in view of Sakai et al. to incorporate first and second sealants along a periphery of one of first and second substrates into a liquid crystal display device to contain the liquid crystal layer and improve an uniform of the cell gap (col. 6, lines 49-50). In addition, Kubota et al. et al. also disclose a polymer network (e.g., polymer dispersion) can be used in in-plane switching type LCD device (i.e., two electrodes forming over the same substrate to form a horizontal electric field) as shown in figure 6. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to employ the Molsen's display having an in-plane switching type LCD to obtain a high contrast, a high luminance and low power consumption LCD device (see col. 4, lines 61-62).

As to claims 12-14, the sealant may include thermosetting resins, UV-cured resins, and dual active resins which can harden in the presence of UV rays as well as heating (col. 6, ln 32).

As to claim 15, Molsen et al. disclose an alignment layer for alignment of the liquid crystal layer (3/6).

As to claim 16, a black matrix, a color filter and common electrode (223) all on opposing substrate (220) is conventional elements of a color active matrix display. Therefore, it would have been obvious to one skilled in the art.

As to claim 17-18, Sakai et al. do disclose a spacer (figure 1, 4) to maintain substrate gap. It would have been obvious to one skilled in the art to employ a spacer having a columnar shape.

It should be noted that the limitation of "by light irradiated to cure ... the first and second sealants" recites a one-step process which does not further limit the structure of the device claims. Therefore, this limitation has not been given patentable weight.

3. Claim 22 stand rejected under 35 U.S.C. 1 03(a) as being unpatentable over United States Patent 6, 122,024 (to Molsen et al.) in view of United States Patent 6,222,603 B1 (to Sakai et al.), United States Patent No. 6,429,914 (to Kubota et al.) and further in view of United States Patent 5,872,609 (to Hiji et al.) as stated in the previous office action.

As to claim 22, the modification to Molsen does not appear to explicitly specify that the photo-reactant material remains uncured. Hiji teaches and discloses a light control element and method wherein a liquid crystal and photo-setting uncured material are irradiated with coherent light beams to result in an anisotropic gel in which orientation is periodically fixed (Column 6, Lines 14-40). Therefore, it would have been obvious to one of ordinary skill in the art of liquid crystals at the time the invention was made to modify Molsen in view of Hiji for an uncured photo-reactant material' so that an anisotropic gel could be formed with periodically fixed orientation.

Response to Arguments

4. Applicant's arguments filed 01/06/2009 have been fully considered but they are not persuasive.

Applicant's arguments are as follow:

a. Molsen et al. fails to disclose the photo-reactant material and the liquid crystal material form a polymer network without distinction layer.

b. Kubota et al. fails to teach or suggest the liquid crystal and photo-reactant material are arranged in the horizontal direction when a voltage is applied across the two electrodes and that the polymer network increases a restoring force to restore the liquid crystal when the voltage is not applied across the two electrodes

c. There is no motivation to combine Molsen et al., using the liquid crystals 8 twisted by the helical polymer network 9 and driven by the vertical electric field, and Kubota et al., using the poly dispersion 12 comprising a liquid crystal 18, driven by the horizontal electric field, and a liquid crystalline polymer 17.

d. Hiji et al. does not cure the deficiency from point a, b and c.

The Examiner's responses are as follow:

a. The Examiner is not convinced by this argument since the same is true of the Molsen et al. polymer liquid crystal material. It should be noted that it is well known in the art to mix two (2) different materials (e.g., photo-reactant material and liquid crystal material) to a mixed compound without any different layer(s) for a liquid crystal layer unless noticed. Therefore, it would have been at least obvious and one skilled in the art would be able to merely find how to mix a mixed liquid crystal compound without distinction layer as claimed as well.

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b. The Examiner respectfully disagrees with Applicant's viewpoint. In particular, Kubota et al. clearly disclose an in-plane switching type LCD (i.e., two electrodes over the same substrate); therefore, the liquid crystal compound (the liquid crystal and photo-reactant material) would be arranged in the horizontal direction when a voltage is applied across the two electrodes and it would increase a restoring force to restore the liquid crystal compound when the voltage is not applied across the two electrodes (e.g., restore the initially stated).

c. In response to applicant's argument that there is no motivation to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, both Molsen et al. and Kubota et al. using a polymer liquid crystal material, and thus it would be proper to apply a different field (from vertical to horizontal field) to drive the liquid crystal layer as shown by Kubota et al. in order to obtain a high contrast, a high luminance and low power consumption LCD device (see col. 4, lines 61-62)..

d. As stated in point a, b and c, the combination of the Molsen et al., Saki et al. and Kubota et al. does meet the claimed limitation; therefore, the combination of Molsen et al., Saki et al., Kubota et al. and Hiji et al. would also be proper as well.

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dung Nguyen whose telephone number is 571-272-2297. The examiner can normally be reached on Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on 571-272-1787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DN
04/13/2009

/Dung T. Nguyen/
Primary Examiner
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